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10/526,566	03/04/2005	Masahiro Oshikiri	L9289.05111	7427

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EXAMINER	
SHAH, PARAS D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,566	OSHIKIRI, MASAHIRO	
	Examiner	Art Unit	
	PARAS SHAH	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,5-8,11,21-23,30 and 31* is/are pending in the application.

4a) Of the above claim(s) *24-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3, 5-8, 11, 21-23, 30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Amendments and Arguments filed on 11/30/2009. Claims 3, 5-8, 11, 21-23, 30 and 31are pending. The Applicants' amendment and remarks have been carefully considered, but they do not place the claims in condition for allowance.

2. All previous objections and rejections directed to the Applicant's disclosure and claims not discussed in this Office Action have been withdrawn by the Examiner.

Response to Amendments and Arguments

3. Applicant's arguments (pages 10-12) filed on 04/23/2009 with regard to claims 3, 5-8, 11, 21-23, 30 and 31 have been fully considered and are persuasive. However, a new reference has been applied to teach the "generating of information based on a power spectrum".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 3, 5-7, 11, 21-23, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin *et al.*(JP 08-263096) in view of Nomura (JP 10-207496) in view of Painter ("Perceptual Coding of Digital Audio) in view of Najafzadeh-Azghandi ("Perceptual Coding of Narrowband Audio Signals").

As to claim 21 and 30, Jin *et al.* teaches a coding apparatus comprising:

a base layer coding section (see [0015], 1st encoder 241) that encodes an input signal per base frame units and obtains a base layer coded code (see [0015]) (e.g. The input into the 1st encoder is the down-sampled signal.);

a decoding section that decodes the base layer(see [0015], local decoder 251) and obtains a decoded signal (see [0015]) (e.g. The local decoder decodes the signal from the encoder 241.);

an enhancement layer coding section (see [0015], 2nd encoder 242) that encodes the plurality of residual signals in units of an enhancement frame (see [0015] and [0016]) (e.g. The values of the decoded signal for which the sampling rate was raised and the input signal are the parameters. A difference is computed and the second coding information is obtained. Difference signals from the base layer is supplied for each time of the base layer);

a multiplexing section (see [0016], multiplexing section 31) that multiplexes the base layer code and the enhancement layer coded code to output a multiplexed code (see [0016], where the multiplexing operation is performed and output as a single code C)

a frequency domain transform section that transforms the plurality of residual signals in the frequency domain and obtains a plurality of frequency domain transform coefficients (see [0021], where the discrete cosine transform is performed in the difference signal).

quantization domain coding section that encodes information for each base frame (e.g. the frequency domain transform coefficients) and obtains the enhancement layer code (see [0021], quantization section 48, quantizes information for enhancement coder based on acoustic weighting section)

However, Jin *et al.* does not specifically teach the frame division section that divides the residual signal into a plurality of residual signals and enhancement layer encoding the difference signal in units of a frame shorter than that of the base frame.

Nomura does teach frame division section that divides a frame shorter than that of the base frame (see [0027]-[0029], frame dividing network 201 divides the input signal into frames and then subframe dividing network divides the frames into subframes.)

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the acoustic coding as taught by Jin *et al.* with the inclusion of enhancement frames shorter than that of the base layer. The motivation to have combined the references involves the ability to control coding delay and bit rate once the signal is inputted until coding starts (see Nomura, [0014] and [0019]). Hence, the input to the frame divider can be placed after the difference signal as taught by Jin *et al.* and then input for encoding into the enhancement layer to reduce delay.

However, Jin in view of Nomura do not specifically teach the two-dimensional plane, domain divider and the quantization domain determining section.

Painter does teach the frequency domain transform coefficients (see page 467, sect. III, left column, 1st paragraph coefficients representing frequency localized signal) represented on a two dimensional plane comprised of a time axis and a frequency axis (see page 467, sect. III, left column, 1st paragraph time-frequency plane);

a domain divider that divides the plurality of frequency domain transform coefficients into a plurality of domains on the two dimensional plane such that each domain includes at least a plurality of frequency domain transform coefficients which are grouped continuously along a time axis (page 467, sect. III, left column,1st paragraph, filter bank divides signal spectrum into frequency subbands which generates a time-indexed series of coefficients);

a quantization domain determining section (see page 467, sect. III, right column, middle of page, quantization performed on subband sequences); and

a quantization domain coding section (see page 467, sect. III, right column, middle of page, coding performed on subband sequences).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the acoustic coding as taught by Jin In view of Nomura with the two dimensional plane as taught by Painter for the purpose of identifying perceptual information in order to mask noise in the input

signal, thereby reducing data to be encoded (see Painter, page 467, sect. III, left column, 1st paragraph and see page 452, right column, 1st full paragraph, where description of perceptual distortion is given). The proposed combination would benefit the teachings of Jin in view of Kono, where Jin discloses a scalable coder that consists of an enhancement layer, which would enable the enhancement layer perform quantization and coding in accordance with a perceptual metric.

However, Jin in view of Nomura in view of Painter do not specifically teach the quantization domain determining section that determines part of the plurality of domains to be quantization targets.

Najafzadeh-Azghandi does teach a quantization domain determining section (see page 109, sect. 5.7.3, 1st paragraph, determination as to which bands are above the masking threshold are determine) that determines a part of the plurality of domains to be quantization targets (see page 109, sect. 5.7.3, 1st paragraph, bands above the masking threshold are quantization targets) based on power spectrum values of the frequency domain transform coefficients within each domain and outputs domain information showing the part of the plurality of domains (see page 109, sect. 5.7.3, 1st paragraph, energy of the bands compared to the thresholds and uses the domains for allocating bits, thus output); and

a quantization domain coding section that encodes the domain information (see page 109, sect. 5.7.3, 1st paragraph, where the bits are assigned to the critical bands above the masking threshold only, thus only the domains for which

the threshold is exceeded) and the frequency domain transform coefficients within the part of the plurality of domains shown by the domain information.

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the acoustic coding as taught by Jin In view of Nomura in view of Painter with the identification of quantization targets as taught by Najafzadeh-Azghandi for the purpose of minimizing the total audible distortion in order to improve output quality (see Najafzadeh-Azghandi, page 111, 1st and 2nd paragraph)

As to claim 3, Jin et al. in view of Nomura in view of Painter in view of Najafzadeh-Azghandi teach all of the limitations as in claim 21, above.

Furthermore, Jin teaches wherein the base layer coding section encodes the input signal using a code excited linear prediction coding (see [0015], CELP).

As to claim 5, Jin *et al.* in view of Nomura in view of Painter in view of Najafzadeh-Azghandi teach all of the limitations as in claim 21, above.

Furthermore, Jin teaches the transformation of the difference signal from the time to frequency domain (see Jin *et al.,* [0021], see DCT 45).

Furthermore, Painter does teach the use of MDCT (see page 469, left column, paragraph above sect. B, MDCT used for time-frequency plane) (e.g. The use of MDCT for DCT would have been obvious to one of ordinary skilled in the art in order for conversion into the frequency domain)

As to claim 6, Jin *et al.* in view of Nomura in view of Painter in view of Najafzadeh-Azghandi teach all of the limitations as in claim 5, above.

Furthermore, Jin teaches the use of a residual signal and the enhancement layer (see [0015], 2nd encoder 242) that encodes the plurality of residual signals in units of an enhancement frame (see [0015] and [0016], difference signal).

Najafzadeh-Azghandi does teach wherein the enhancement layer coding section encodes only part of the signal transformed to a frequency domain (see page 109, sect. 5.7.3, 1st paragraph, where the bits are assigned to the critical bands above the masking threshold and only assigned to those above a threshold).

As to claim 7, Jin *et al.* in view of Nomura in view of Painter in view of Najafzadeh-Azghandi teach all of the limitations as in claim 5, above.

Furthermore,

Painter does teach a perceptual masking section that calculates perceptual masking expressing an amplitude value which does not affect to auditory perception, wherein the enhancement layer coding section does not regard signals in the perceptual masking as coding targets (see page 452, Figure 1, psychoacoustic analysis and output to yield masking thresholds and see page 452, right column, 1st full paragraph, where psychoacoustic models sets

threshold to prevent audible artifacts and see page 460, left column, equations 8 and 9, where the thresholds are calculated with regards to the formulas).

Claims 11, 22, 23, and 31 are rejected as reciting similar limitations as that cited above for the encoder. It is well known in the art that the decoder is a mirror image of the encoder. Further, the cited references, as above on the encoder claims, mentions the use of a decoder with all steps shown in the decoder claims (see Jin et al. [0022]-[0024]).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jin *et al.*(JP 08-263096) in view of Nomura (JP 10-207496) in view of Painter in view of Najafzadeh-Azghandi as applied to claim 5 above, and further in view of Kono (JP 08-046517).

As to claim 8, Jin et al. in view of Nomura in view of Painter in view of Najafzadeh-Azghandi in view of Kono teach all of the limitations as in claim 7, above.

However, Jin *et al.* in view of Nomura in view of Painter in view of Najafzadeh-Azghandi do not specifically teach the perceptual masking section.

Furthermore, Kono teaches wherein the enhancement layer coding section calculates a difference between perceptual masking and a residual signal (see Kono, [0056], [0059]-[0065], noise allowance is determined based on the noise level for that band and the actual noise that was determined from the Bark spectrum and computes an alpha value), regards a residual signal for which the

difference is relatively large as a coding target and encodes the positions in a time domain and frequency domain (see [0066]) (e.g. From the spectrum an auditory masking values are determined and subtracted from the amplitude values depending on a threshold. Further, the result is implicitly used as coding information for bit allocation.) in which the residual signal exists on the two-dimensional plane (see [0052]-[0066]). (e.g. The use of MDCT will transform the time domain signal into frequency domain for the incoming frame. Hence, the frame information, which contains the timing, is preserved in order for it to be decoded for output.).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the coding apparatus taught by Jin et al. and Nomura in view of Painter in view of Najafzadeh-Azghandi with residual signal as taught by Kono. The motivation to have combined the references involves the consideration of the auditory masking from the spectrum of data from an allowable noise spectrum level and for performing bit allocation as a result (see Kono, [0051]- [0052]).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shimizu et al. (US 5,911,130) is cited to disclose audio compression using amplitude, frequency, and time information. Atlas (US 7,136,418) is cited to disclose scalable signal coding and decoding using a 2-D transform.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARAS SHAH whose telephone number is (571)270-1650. The examiner can normally be reached on MON.-THURS. 7:30a.m.-4:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571)272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. S./
Examiner, Art Unit 2626

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626

02/05/2010